NATIONAL TRANSPORTATION SAFETY BOARD
Office of Research and Engineering
Washington, D.C.
May 16, 2000

Addendum to Flight Data Recorder Factual Report

A.   ACCIDENT   DCA00MA006

Location: About 60 miles south of Nantucket, Massachusetts
Date: October 31, 1999
Time: About 150 EST
Aircraft: EgyptAir Flight 990, a Boeing 767-300ER, SU-GAP

B.   GROUP

This phase of the investigation was not a group activity.

On April 18, 2000, the FDR tape from EgyptAir Flight 990 was hand-carried to the FDR manufacturer's facility in Redmond, Washington, for copying.   The following persons convened at the facility and assisted in the activity:

Thomas R. Jacky, National Transportation Safety Board

Waguih Hanna, EgyptAir

John Moesch, Honeywell

C.   SUMMARY

The tape removed from EgyptAir Flight 990's flight data recorder (FDR), a Sundstrand Data Corporation (now Honeywell) Universal Flight Data Recorder (UFDR), part number 980-4100-DXUS, serial number unknown, was hand-carried to the manufacturer's facility in Redmond, Washington, in order to copy the tape. The copy tape was produced for EgyptAir's use.

After duplicating the tape and verifying the signal quality of the copy, Honeywell delivered the copy tape to the custody of the EgyptAir representative in attendance.

Honeywell also transcribed the accident track of data into a format compatible with ADRAS (Aircraft Data Recovery and Analysis Station) software, which EgyptAir owns.

D.   <u>DETAILS OF INVESTIGATION</u>

The FDR tape removed from EgyptAir Flight 990's FDR was hand-carried to the Honeywell facility in Redmond, Washington. The purpose of the activity was to produce a copy of the original tape for use by EgyptAir at the airline's Cairo, Egypt laboratory.

First, Honeywell personnel removed the tape leaders attached to the tape by the NTSB during the initial readout and installed approximately 10 feet of blank tape to one end of the tape. Then the original FDR tape was installed into a working UFDR. Then, using a Honeywell Copy Recorder (with a blank tape mounted), a Honeywell UFDR Interface Unit, and the built-in copy/playback feature of the UFDR, a direct, one-to-one copy of the FDR was made. The original FDR waveforms were copied onto the blank copy tape installed on the copy recorder.

Typically, as part of the copy process, a short "tone" is written onto the original tape, which overwrites several seconds of resident FDR data. However, because of the sensitivity of the original tape, the tape was aligned such that the tone was written onto the added blank tape. No tone was written onto the original tape.

After completion of the copy process, the signal strength of the copy tape was verified. Honeywell personnel studied the waveforms on the copy tape, as well as synchronization data portion of the data, to determine that the strength of the copied signal should be adequate for further use by EgyptAir.

Next, conversion equation information for several nominal parameters recorded by the FDR were entered into Honeywell's ADRAS computer software. Using ADRAS and the copy recorder/interface unit system, the copy tape was transcribed. The accident flight was identified on track 3. The data from the copy tape appeared to be similar to data as transcribed by the Flight Data Recorder Group.

Finally, Honeywell transcribed the contents of track 3, the accident track, into a standard data file (.SDF) on a computer floppy diskette, for use with EgyptAir's ADRAS system.

Tom Jacky
Aerospace Engineer